

Claims

1. An aircraft fuel tank system comprising:

at least one aircraft fuel tank;

an air separation means for producing nitrogen-enriched air, and

5 control means operable to control said air separation means to supply nitrogen-enriched air into said at least one aircraft fuel tank during cruise conditions and to supply nitrogen-enriched air at a higher flow rate during descent, whereby substantially the whole of the mass of gas required to maintain the pressure difference across the walls of the fuel tank below a design threshold is provided  
10 by said air separation means.

2. An aircraft fuel tank system as claimed in Claim 1, wherein said control means controls the air separation means such that the whole of the mass of gas required to maintain said pressure difference is provided by said air separation device.

15 3. An aircraft fuel tank system as claimed in Claim 1 and Claim 2, wherein said air separation means in use provides nitrogen-enriched air having a relatively high concentration of nitrogen at relatively low mass flow rates, with the concentration of nitrogen being lower at higher mass flow rates.

4. An aircraft fuel tank system as claimed in any of the preceding Claims,  
20 including means for distributing the nitrogen-enriched air at a number of spaced locations in said at least one aircraft fuel tank, thereby in use to reduce variations in concentration of nitrogen within said tank.

5. An aircraft fuel tank system as claimed in any of the preceding Claims, wherein said air separation means comprises a Hollow Fibre Membrane.

6. An aircraft fuel tank system comprising:

at least one aircraft fuel tank;

means for providing nitrogen-enriched air for delivery into said at least

5 one tank, and

means for distributing said nitrogen-enriched air at a number of spaced locations within said at least one tank.

7. An aircraft fuel system as claimed in Claim 6, wherein said substantially the entire amount of nitrogen-enriched air is drawn from said providing means.

10 8. A method of inerting at least one aircraft fuel tank which comprises operating an air separation device during cruise conditions to deliver nitrogen-enriched air with a relatively high concentration of nitrogen at a relatively low mass flow rate into said aircraft fuel tank, and operating said air separation device during descent conditions to deliver nitrogen-enriched air with a lower concentration of nitrogen and at a relatively high mass flow rate, whereby the  
15 air-separation device provides substantially the whole of the mass of gas required to maintain the pressure difference across the walls of the or each fuel tank below a design threshold.